

14.

Effect of characteristics of the female parent on the formation of economically valuable traits in hybrids of hemp. S. I. I. sem. 19 No. 5, 1958.

Monthly List of Russian Accessions, Library of Congress, October 1958. UNCLASSIFIED.

1. СОВЕТЫ, Т.5.
2. УССР (600)
4. Хемп
7. Dependence of fiber quality in hemp hybrids on growing conditions, Sel.i sem. 20 no. 5 1953.
9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953. Unclassified.

SHYVAYEV, L. A.

USSR/Nuclear Physics - Cosmic Rays
Particles, Elementary

21 Nov 49

"Absorption Spectrum of Penetrating Particle Currents of Wide Atmospheric Showers in Cosmic Rays," G. T. Zatsepin, I. L. Rozental', S. A. Slavatskiy, G. B. Khristiansen, L. A. Shyvayev, Phys Inst imeni Lebedev, Acad Sci USSR, 3 pp

"Dok Ak Nauk SSSR" Vol LXIX, No 3

Employed usual method of variation of area of counters connected in coincidence scheme, and method of variation of "coincidence multiples," to determine subject spectrum and clarify nature of penetrating particles. Submitted 22 Jul 1949 by Acad D. V. Skobel'tsyn.

158T76

SOV/124-58-2-1539

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 2, p 7 (USSR)

AUTHOR: Shuvayev, N. A.

TITLE: The Equation of Motion for the Center of Mass of a System of Particles Having a Variable Mass. General Case. (Uravneniye dvizheniya tsentra mass sistemy tochek peremennoy massy v obshchem sluchaye)

PERIODICAL: Uch. zap. Gor'kovsk. un-ta, 1955, Nr 28. pp 56-69

ABSTRACT: The article presents the equations of motion for the center of mass of a system under the assumption that the system mass varies through to the simultaneous joining and separation of particles without consideration of their relative motion. The equations of motion of the center of mass are developed both for the absolute reference system and for a coordinate system the axes of which have an arbitrary motion. The article considers some laws of particle radiation. The equations of motion for the center of mass pertaining to the radiating particles have a simpler form.

Card 1/1

A. I. Zenkin

124-1957-1-75 D

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 8 (USSR)

AUTHOR: Shuvayev, N. A.

TITLE: Critical Historical Analysis of the Developments of the Fundamentals of Variable-Mass Mechanics (Istoriko-kriticheskiy analiz razvitiya osnov mekhaniki peremennykh mass)

ABSTRACT: Bibliographic entry of the author's dissertation for the Degree of Candidate of Physical-Mathematical Sciences. In: Istorii yestestvozn. i tekhn. AN SSSR (Institute of the History of Natural Sciences and Technology, USSR Academy of Sciences), Moscow, 1956.

ASSOCIATION: In: Istorii yestestvozn. i tekhn. AN SSSR (Institute of the History of the Natural Sciences and Technology, USSR Academy of Sciences), Moscow.

1. Variable mass mechanics--Fundamentals--Critic

Card 1/1

ALEKSANDROV, V.K.; SHUVAYEV, N.A.

Automatic record of the lines of flow of a fluid. Sudostroenie 29
no.4:54-55 Ap '63. (MIRA 16'4)
(Recording instruments)(Aerodynamics--Electromechanical analogies)

BOGOSLOVSKIY, I.M., inzh.; SHUVAYEV, P.N.

Manufacturing parts of the "flanged ring" type of sheet steel. Khim.
mash. no. 3:33-34 My-Je '60. (MIRA 14:5)
(Chemical engineering—Equipment and supplies)

FERAPONTOV, A.D., starshiy laborant; SHUVAYEV, P.N., slesar'

Flat specimens with thread for mechanical tensile tests. Sbor.st.
NIIKHIMMASH no.33:133-134 '60. (MIRA 15:5)
(Testing machines)

SVECHNIKOV, S.V., kand. tekhn. nauk; SHUVAYEV, V.A.

Photoconverter controlled by the voltage function. Avt. 1
prib. no. 4851-54 O-D '64 (MIRA 18:2)

ACCESSION NR: AP5009042

S/0302/65/000/001/0061/0064
621.373.431.1

AUTHOR: Borovskiy, V. P.; Partala, O. N.; Shuvayev, V. A.

TITLE: Generation of FM oscillations in a wide range by multivibrators

SOURCE: Avtomatika i priborostroyeniye, no. 1, 1965, 61-64

TOPIC TAGS: FM oscillation, multivibrator, FM signal generator

ABSTRACT: As phantastron FM signal generators easily develop spurious AM and present difficulties in filtering the 1st harmonic, a symmetrical electron-tube RC multivibrator is proposed for this purpose. These experimental results are claimed: frequency range, 1 : 150; frequency drift on tube replacement, $\pm 1.25\%$; frequency drift on $\pm 10\%$ heater-voltage variation, $\pm 0.4\%$; the frequency was practically constant with an anode-voltage variation of $\pm 10\%$. Orig. art. has: 4 figures and 5 formulas.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: EC

NO REF SOV: 002

OTHER: 000

Card 1/1

ACCESSION NR: AP5001744

S/0302/64/000/004/0051/0054

B

AUTHOR: Svechnikov, S. V. (Candidate of technical sciences); Shuvayev, V. A.

TITLE: Voltage-function photoconverter

SOURCE: Avtomatika i priborostroyeniye, no. 4, 1964, 51-54

TOPIC TAGS: photoconverter, voltage function converter

ABSTRACT: An analog-to-analog photoconverter is proposed as a substitute for mechanical sliding-contact potentiometers. The converter consists of a transistor with the input voltage applied between its emitter and base and a gas-filled cold-cathode lamp connected into its collector circuit. As the lamp luminescence intensity is proportional to its current in a wide range, a (selenium-cadmium) photovaristor placed near the lamp will pass a current proportional to the input voltage. Temperature stabilizing resistors are provided in the circuit. The inertia of both the lamp and photovaristor is responsible for a

Card 1/2

ACCESSION NR: AP5001744

serious signal shape distortion; hence, the recommended frequency range is 10—100 cps. Orig. art. has: 3 figures and 14 formulas.

ASSOCIATION: Institut poluprovodnikov AN UkrSSR (Institute of Semiconductors, AN UkrSSR)

SUBMITTED: 00

ENCL: 00

SUB CODE: EC

NO REF SOV: 001

OTHER: 001

Card 2/2

L 6961-66 ENT(1)/EWA(h)
ACC NR: AP5020931

SOURCE CODE: UR/0142/65/008/003/0366/0368

AUTHOR: Vollerner, N. F. (Prof.); Borovskiy, V. P.; Shuvayev, V. A.

ORG: none

TITLE: A ¹⁵generator of video pulses of arbitrary shape

SOURCE: IVUZ. Radiotekhnika, v. 8, no. 3, 1965, 366-368

TOPIC TAGS: pulse shaper, RC circuit, pulse generator

ABSTRACT: In contrast to the complex arbitrary function generators described in the literature, a comparatively simple scheme for obtaining pulses of arbitrary shape is described. The method is basically the following: 1) the creation of a step function of n quantizing pulses of identical duration and amplitudes proportional to the instantaneous values of the function at successive instants; 2) smoothing the step function with a low-frequency filter such as an integrating RC circuit. A commutator based on cold-cathode thyratrons operating on the principle of a counting circuit is proposed since it is simpler and more reliable than commutators. If

UDC: 621.373.53

Card 1/2

L 6961-66

ACC NR: AP5020931

a symmetrical pulse shaper is desired, the number of commutator cells can be halved. A generator with a capacity of 64 quantizing pulses is capable of generating functions from 5 microseconds to several seconds in duration. The functions generated are within 2-3% of the theoretical estimates. The arbitrary function generator should find wide use in analog computer technology, modeling of systems, and production of AM and FM oscillations with arbitrary modulations. Orig. art. has: 4 figures.

SUB CODE: EC/

SUBM DATE: 26Jun64/

ORIG REF: 002/

OTH REF: 001

Card 2/2 *rd*

ZAGULYAYEVA, A.I., nauchnyy sotrudnik; SHUVAYEV, V.M.

Rapid method for manufacturing leather from whale skin.
Kozh.-obuv.prom. no.12:7-9 D '59. (MIRA 13:5)

1. Tikhookeanskiy nauchno-issledovatel'skiy institut morskogo
rybnogo khozyaystva i okeanografii (for Zagulyayeva).
(Whale) (Leather)

L 14498-65 EWT(m)/EWP(j)/T Pc-4 IJP(c)/AFWL/SSD/ESD(gs)/ESD(t) RM
 S/0048/64/028/010/1725/1727
 ACCESSION NR: AP4048648

AUTHOR: Kocharov, G.Ye.; Naydenov, V.O.; Shuvayev, V.M.

TITLE: A ¹⁹proportional counter filled with a mixture of xenon and isopentane ¹Report, Fourteenth Annual Conference on Nuclear Spectroscopy held in Tbilisi 14-22 Feb 1964 ^B

SOURCE: AN SSSR. Izv. Seriya fizicheskaya, v.28, no.10, 1964, 1725-1727

TOPIC TAGS: proportional counter, xenon, isopentane, gamma ray spectrum, barium

ABSTRACT: The coefficients K and U that characterize a gas, according to the theory of proportional counters (R.W.Kiser, Appl.Sci.Res.8,183,1960; G.Ye.Kocharov, and G.A.Korolev, Izv.AN SSSR, Ser.fiz.27,301,1963), were measured for a xenon + isopentane mixture by the method of Kocharov and Korolev (loc.cit.). A 27.4 cm long counter with a 4.6 cm diameter cathode and a 50 micron diameter anode containing xenon at 650 mm Hg and isopentane at 10 mm Hg was employed with 5.07 MeV α -particles and 30.6 and 41.9 keV γ -rays. The values of K and U were found to be 64.5 V/cm mm Hg and 23 V, respectively. It follows from these data that the cross section of xenon for ionization by electrons is $3.2 \times 10^{-16} \text{ cm}^2$. B.Pontecorvo (Helv.Phys.acta,

1/3

L 14498-65

ACCESSION NR: AP4048648

23, Suppl. 3, 97, 1949) showed that the energy resolution of a proportional counter is reduced by space-charge effects when the gas amplification exceeds a certain critical value, and that the product of this critical amplification and the energy released in the working volume of the counter is constant. Working with x-rays, Pontecorvo found this product to be 3×10^8 eV. This product was measured with 5.07 MeV α -particles and 30.6 keV γ -rays and was found to be 1.7×10^8 and 1.5×10^8 eV in the two respective cases. The reduction in energy resolution when the critical amplification is exceeded is illustrated with Ba^{133} γ -ray spectra recorded at anode potentials of 1.9 and 2.0 kV. The γ -ray spectrum of Ba^{133} was recorded at energies from 30 to 80 keV. Three lines were observed at 30.6, approximately 50, and 78.6 keV. From the relative intensities and known internal conversion coefficients it is concluded that the L to K capture ratio is 1.1. This is in good agreement with the finding of R.K. Gupta, S. Iha, M. Joshi and B.K. Madan (Nuovo cimento 8, 48, 1958) and in disagreement with the result of M. Langevin (Compt. rend. 240, 289, 1955). Orig. art. has: 4 figures.

2/3

L 14498-65

ACCESSION NR: AP4048648

ASSOCIATION: Fiziko-tekhnicheskiy institut im.A.F.Ioffe Akademii nauk SSSR (Physi-
cotechnical Institute, Academy of Sciences, SSSR)

SUBMITTED: 00

SUB CODE: NP

NR REF SOV: 002

ENCL: 00

OTHER: 004

SAZHIN, B.I.; SHUVAYEV, V.P.

Electric conductivity of polystyrene solutions. Vysokom. soed. 7
no.6:962-965 Jo '65. (MIRA 18:9)

1. Nauchno-issledovatel'skiy institut polimerizatsionnykh plastmass.

SHUVAYEV, V.P.; ANIKOVICH, V.F., kand. sel'skokhoz. nauk

Fall tillage of soil. Zemledelie 27 no.8:35-39 Ag '65.
(MIRA 18:11)

1. Orenburgskaya oblastnaya sel'skokhozyaystvennaya opytnaya
stantsiya (for Anikovich).

SAZHIN, B.I.; SHUVAYEV, V.P.; VESELOVSKAYA, L.N.

Determining the molecular weights of polymers by the electric
resistance of their solutions. Plast. massy no.11:48-50
'65. (MIRA 18:12)

SHUVA YEV, V.S.; VASI 'CHIKOV, F. Ya.

Using graphs to solve some transportation problems. Izv.vys.uch.-
zav.; stroi. i arkhit. 5 no.4:109-116 '62. (MIRA 15:9)

1. Kuybyshevskiy inzhenerno-stroitel'nyy institut imeni Mikoyana.
(Transportation, Automotive)

DOMANSKIY, V.Ye., prof.; SHUVAYEV, V.S., dotsent; ARNGOL'D, A.V.

"Design and operation of a tailings storage department of an ore dressing plant" by P.D.Evdokimova. Reviewed by IA.A. Rubinchik. Remarks on the book review by V.E.Domanskii, V.S. Shuvaev, A.V.Arngol'd. Reviewers' response. TSvet.net. 35 no.12:73-77 D '62. (MIRA 16:2)

1. Kuybyshevskiy inzhenerno-stroitel'nyy institut (for Domanskiy).
2. Kuybyshevskiy inzhenerno-stroitel'nyy institut (for Shuvayev).
3. Vsesoyuznyy institut po proyektirovaniyu organizatsiy energeticheskogo stroitel'stva (for Arngol'd).
(Tailings (Metallurgy)) (Evdokimova, P.D.)

Shuvayev V.T.

Q-2

USSR/Farm Animals. Cattle

Abs Jour : Rod Zhur - Biol., No 8, 1958, No 35624

Author : Shuvayev V.T.

Inst : Not Given

Title : The Methods Used for the Improvement of the Dairy Herd of the Red Steppe Breed in the Severo-Lyubinskiy Sovkhoz of the Omsk Oblast'

Orig Pub : Tr. Novosib. s.-kh. in-ta, b. g., 11, 92-109

Abstract : The fixation and improvement of highly productive milk and fat-type strains of the progeny of four bulls, the crossing of these strains with other strains, and their inbreeding with the Shorthorns, constituted the basic methods of raising Red Steppe cattle at the Severo-Lyubinskiy sovkhov of the Omsk Oblast'. The breeding was carried out according to strains and families, and individual selection. A series of organizational and economical measures were adopted. The live weight of the tertiary cows increased up to 514 kg., their average milk yield augmented by 931 kg. (up to 4,719 kg.).

Card : 1/2

Q-2

USSR / Farm Animals.

Abs Jour : Ref Zhur - Biol., No 10. 1958, No 45161

Author : Shuvayev, V. I.

Inst : Not given

Title : Methods for the Improvement of the Dairy Cattle of the Red
Steppe Breed.

Orig Pub : S. kh. Sibiri, 1957, No. 8, 45-49.

Abstract : The formation and improvement of the herd of the Severo-
Lyublinskiy sovkhov of the Omsk Oblast' is described.

Card 1/1

8

SHUVAYEV, V. T.: Master Agric Sci (diss) -- "Increasing the productivity and stock qualities of red steppe cattle in the herd of the north Lyubinskiy sovkhoz, Omsk Oblast". Omsk, 1958. 24 pp (Min Agric USSR, Abstracts of Dissertations Presented at the Omsk Agric Inst im S. M. Kirov), 150 copies (KL, No 10, 1959, 127)

KIRPATOVSKIY, I.D.; SHUVAYEV, V.V. (Moskva)

Some special problems of transplantation, based on materials of the
scientific conference of the Laboratory for Transplantation of
Organs and Tissues at the Academy of Medical Sciences of the U.S.S.R.
Vest. AMN SSSR 18 no.12:89-90 '63. (MIRA 17:7)

KIRPATOVSKIY, I.D.; OKSMAN, T.M.; SHUVAYEV, V.V.

Technique of the replantation of an extremity in dogs. Trudy
Izgo MM 12:25-29 '65.

Intravital lympho- and vasography in a replanted extremity;
preliminary report. Ibid. 12:18 (MIRA 19:2)

1. laboratoriya po peresadke organov i tkaney AN SSSR.

SHUVAYEV, V.V.

Nerve suture and its use in the replantation of an extremity;
a review of the literature. Trudy 1-go MMI 42:101-111 '65.
(MIRA 19:2)

1. Laboratoriya po peresadke organov i tkaney AMI SSSR.

OSCHAGOV, V.V.; IAFIN, A.K.; SIBIRYAYEV, V.V.; N. AMELIN, I.V.; SPANCOV, Yu.Ya.

Expediency of using metal conductor prostheses for nerve trunks.

Trudy 1-go MMI 42:119-128 '65. (MIR 19:2)

1. laboratoriya po peresadke organov i tkaney AN SSSR i kafedra patologicheskoy anatomii 1-go Moskovskogo ordena Lenina meditsinskogo instituta imeni Sechenova.

1965, L.M.; SHIVAYEV, V.V.; BELKIN, A.I.

Regional perfusion in autotransplantation of an extremity;
preliminary report. Trudy I-go MMI 42:153-159 '65.

(MIRA 19:2)

1. Laboratoriya po peresadke organov i tkaney AMN SSSR.

LUPENKO, V.I.; SHUVAYEV, Ye.S.

Length of blowout of a system by inert gas. Khim. i tekhn. topl. i
masel No.2:58-60 P '57. (MLRA 10:4)
(Petroleum industry--Equipment and supplies)
(Gases, rare)

AUTHORS:

5/065/60/000/009/004/006/XX
8030/K12
Khalilbekiy, G.N., Buratani, N.B., Kuznetsov, G.D.,
Baklanov, V.A., and Shvachkin, V.S.

TITLE:

Catalytic Reforming of Benzene Fractions on a
Platinum Catalyst

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1960, No. 9,
pp. 129

TEXT: Full-scale plant studies have been conducted on reforming Eastern and Southern crudes on a platinum/alumina catalyst. Rumanian, Kirguz, and Egyptian crudes have also been investigated. Two types of plant have been developed with reactor pressures around 20 and 40 atmospheres respectively. The former plant, better for producing high octane splits and aromatics for use in aviation fuels, is a full-scale 1000 kg/hr. reactor at 20 atm. The aromatic yield is 11% from 1% naphthene at 305°C from 36 to 13% on increasing the catalyst and decolorized by sulphur compounds become troublesome at the lower pressure, especially with G₂ and heavier fractions. If the sulphur content

Card 1/3

Catalytic Reforming of Benzene Fractions on a Platinum Catalyst

of the crude rises from 0.01% to 0.07%, the octane number falls from 77.3 to 70.3, the aromatic yield falls 1.7 times, and the gas yield increases 1.5 times. The sulphur content of the feedstock should be less than 0.05%, especially at 20 atmospheres operation. For low sulphur crudes (0.05-0.07% sulphur feed), the G₂ is removed from the circulating gas with ethanoline, and for high sulphur feeds (greater than 0.07% weight sulphur) by treating it with caustic. The catalyst can be regenerated by oxidation for about 30 hours at 300-450°C, with 0.6-1.5% of oxygen in the gas which circulates at 10-20 atmospheres. After subsequent regeneration, the aromatic yield falls by 30-50%. Benzene and naphthene are separated (around 150°C) by liquid-liquid extraction. The catalyst is then reactivated. The most important crude factor determining the yield of high octane splits and aromatics is the naphthene content. Southern crudes (containing about 10% naphthene) yield 1.5 times more aromatics than Eastern crudes (containing about 3% naphthene), the difference becoming greater as higher boiling feedstocks are used. At 30 atm severity, the 85-180°C cuts yields 81% motor

Card 2/3

splits from Eastern crudes, and 91% from Southern crudes. A. A. Fedosov participated in the work. There are 4 figures, 4 tables and 17 references: 5 Soviet and 12 non-Soviet.

ASSOCIATION: Khimicheskaya Gornostroyushchaya

(UNIONRESEARCH, GORNOSTROY)

Card 3/3

Chemical Abstracts

Vol. 48 No. 5

Mar. 10, 1954

General and Physical Chemistry

chem

Chromatography of ions on the aluminate oxide of aluminum, R. N. Gordin and G. M. Kosolapoff, *Izvestiya i Oblasli Khromatog., Trudy Vsesoyuz. Sovetskoye Khromatog., Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1950, 41-5 (Pub. 1952); cf. C.A. 43, 7850d; 44, 7708e.—The use of an adsorbent, named aluminate oxide of Al, in which the active group appears to be AlO_2Na , and which is prepd. by treatment of 2% Na aluminate with CO_2 , washing the pptd. hydroxide, drying at $100-30^\circ$, and calcining at 800° 10 min., is discussed (cf. preceding abstr.). The applicability and the general properties of this adsorbent are the same as those of the material prepd. according to Brockmann and Schodder (C.A. 35, 2390). G. M. Kosolapoff

7-27-54

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p>1220</p> <p>ALUMINUM OXIDE CONTAINING ALUMINATE FOR CHROMATOGRAPHIC ION ANALYSIS. E. N. Gapon and G. M. Shvets. <u>Doklady Akad. Nauk S.S.S.R.</u> 70, 1007-10 (1956) Feb. 31. (In Russian)</p> <p>A comparative study of a number of Al_2O_3 preparations led to the following methods for obtaining substances suitable for chromatographic separation of ions. $Al(OH)_3$ is precipitated by CO_2 from a weak solution of $NaAlO_2$ (obtained by dissolving Al in a 30% $NaOH$ solution); the precipitate, calcined at $800^\circ C$ for 10 min, is an adsorption product (Al_2O_3). Al_2O_3. Used in a chromatographic column, this preparation separates cations through selective exchange with Na^+ ion. When destined for the separation of anions, it is previously treated with 1N HNO_3, transforming it into (Al_2O_3), $AlO.NO_3$, which separates anions through selective exchange with Na^+ ion. All the separations are very satisfactory, and the order in which various ions are adsorbed is that established by Schwab et al. (<u>Angew. Chem.</u> 59, 546, 601 (1937)). These latter authors used Merck's preparation of Al_2O_3 (always containing Na) as standardized by Brockmann (later described by Brockmann et al. in <u>Ber.</u> 74, 73 (1941)).</p> <p><i>Moscow Agric. Acad. in K. A. Timiryazev</i></p> <p>ASB-55A METALLURGICAL LITERATURE CLASSIFICATION</p>																			

DOBININ, M.M., akademik, otvetstvennyy redaktor; GAPON, Ye.N.; GAPON, T.B.;
ZHYPAKHINA, Ye.S.; RACHINSKIY, V.V.; BELEN'KAYA, I.M.; SHUVAEVA, G.M.;
ROGINSKIY, S.Z.; YANOVSKIY, N.I.; FUES, N.A.; KISELEV, T.V.; NEYMARK, I.Ye.;
SLINYAKOVA, I.B.; KHATSET, F.I.; LOSEV, I.P.; TROSTYANSKAYA, Ye.B.;
TEVLINA, A.S.; DAVANKOV, A.B.; SALDADZE, K.M.; BRUMBERG, Ye.M.; ZHIDKOVA,
Z.V.; VEDENEVA, N.Ye.; NAPOL'SKIY, S.A.; MIKHAYLOVA, Ye.A.; KAZANSKIY, B.A.;
RYABCHIKOV, D.I.; SHERYAKIN, P.M.; KRETOVICH, V.L.; BUNDEL', A.A.; SAVINOV,
B.G.; VENDT, V.P.; EPSHTEYN, Ya.A.

[Research in the field of chromatography transactions of the All-Union
Conference on Chromatography, November 21-24, 1950] Issledovaniia v oblasti
khromatografii; trudy Vsesoiuznogo soveshchaniia po khromatografii, 21-24
noiabria 1950 g. Moskva, Izd-vo Akademii nauk SSSR, 1952. 225 p.
(MLRA 6:5)

1. Akademiya nauk SSSR. Otdelenie khimicheskikh nauk.
(Chromatographic analysis)

Brit. Abst.
Sept. 1953
General Technique
Laboratory Apparatus

2656. Secondary adsorption of ions on aluminated Al_2O_3
aluminium oxide. G. M. Shuvaeva and E. N. Gapon
(J. anal. Chem., USSR, 1953, 8, 50-52).--

Adsorption of cations on cation-exchange Al_2O_3 is known (Schwab and Jockers, Angew. Chem., 1937, 50, 546) to be accompanied by simultaneous adsorption of anions when the cations are multivalent. It is now shown that simultaneous adsorption of cations occurs on anion-exchange Al_2O_3 when the anions are multivalent. An explanation of these phenomena is given, and examples of their occurrence in chromatographic work are described. G. S. Smith.

(2) Clem

MF
9-22-54

SHUVAYEVA, N.I. (Moskva)

Pregnancy, birth and puerperium in certain infectious diseases.

Fel'd. i akush. 22 no.9:7-14 S'57

(MIRA 11:10)

(PREGNANCY, COMPLICATIONS)

(LABOR, COMPLICATED)

SHUVAYEVA, N.I.

Course of pregnancy and labor in women with pulmonary tuberculosis.
Sov.med. 22 no.8:78-84 Ag '58 (MIRA 11:10)

1. Iz kafedry akusherstva i ginekologii (sav. - prof. K.M. Zhmakin)
I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M.Sechenova.
(PREGNANCY, in various dis.
pulm. tuberc., pregn. (Rus))
(TUBERCULOSIS, PULMONARY, in pregn.
pregn. (Rus))

SHUVAYEVA, N. I., Candidate Med Sci (diss) -- "The course of pregnancy, birth, and the postnatal period in tuberculosis patients". Moscow, 1959. 18 pp (First Moscow Order of Lenin Med Inst im I. M. Sechenov), 200 copies (KL, No 24, 1959, 153)

Belikov, S.I., Kovaleva, T.M., Mosin, N.I.

Chemical forms of the radioactive isotope As^{76} formed in the neutron irradiation of phenylarsonic acid, and the production of enriched As^{76} preparations. Radiokhimiya 6 no.3:329-335 '64.

(MIRA 18:3)

SHUVAYEVA, V.I.

Mechanical jaundice according to materials of the surgical clinics of the Moscow Provincial Scientific Research Clinical Institute. Trudy mol. nauch. sotr. MONIKI no.1:50-54 '59 (MIRA 16:11)

1. Iz 1-y khirurgicheskoy kliniki Moskovskogo oblastnogo nauchno-issledovatel'skogo klinicheskogo instituta imeni Vladimirovskogo.

*

SHUVAYEVA, V.I.

Cancer of the pancreas according to data from MONIKI surgical clinics. Vop. klin. pat. no.2:103-107 '61

(MIRA 16:12)

1. Iz 1-y khirurgicheskoy kliniki (zav. - dotsent N.I. Makhov) Moskovskogo oblastnogo nauchno-issledovatel'skogo klinicheskogo instituta imeni Vladimirskogo.

KOTEL'NIKOVA, Z.P.; SHUVAYEVA, Ye.P.

Dimercaprol as an antidote against hexenal. Nauch. zh. Riaz.
med. inst. 15:41-42 '62. (MIRA 17:5)

1. Kafedra farmakologii (zav. kafedroy - dotsent A.A.Nikulin)
Ryazanskogo meditsinskogo instituta imeni Pavlova.

1. The first part of the report, by MARTIN, M., is titled "The

Effect of Learning on the Structure and Properties of Complex Systems

(MIR 18-1)

SHUVCHINSKIY, L.

Rapid repair of hearth bottoms. Biul. TSIICHM no.2:33 '61.

(MIRA 14:9)

1. Zavod "Azovstal' ",
(Open-hearth furnaces--Maintenance and
repair)

SHUVAYEVA, V. I.

Technic, indications, and diagnostic value of transhepatic
cholangiography. Khirurgia 37 no.7:61-64 J1 '61.
(MIRA 15:4)

1. Iz 1-y khirurgicheskoy kliniki (zav. - doktor meditsinskikh
nauk N. I. Makhov) Moskovskogo oblastnogo nauchno-issledovatel'-
skogo klinicheskogo instituta imeni M. F. Vladimirskogo.

(BILE DUCTS—RADIOGRAPHY) (JAUNDICE)

SHUVYRIN, D., general-mayor

Types of security. Voen.-znan. 41 no.12:24 D '65.
(MIRA 18:12)

SHAKHOV, F.N.; SHUYER, A.M.

Standardization of column apparatus of by-product coking plants.
Koks i khim. no.5:32-39 '57. (MLHA 10:5)

1. Khar'kovskiy filial Nauchno-issledovatel'skogo instituta
khimicheskogo mashinostroyeniya.
(Distillation apparatus)

SHUKH, P. P.

AUTHORS: Shakhov, F.N. and Shuer, A.M.

68-5-7/14

TITLE: Standardisation of column apparatus for coke oven works.
(Tipizatsiya kolonnykh apparatov koksokhimicheskikh zavodov).

PERIODICAL: "Koks i Khimiya" (Coke and Chemistry), 1957, No.5,
pp.32-39 (U.S.S.R.).

ABSTRACT: The authors point out that some distillation equipment used at present on coke ovens should be redesigned in the light of modern knowledge of the hydrodynamics of a bubble cup plate. As an example lime-ammonia and benzole distillation columns are quoted. A review of various types of cup bubble plates, types of overflow, their performance, types of columns and methods of their assembly and criteria for the choice of diameter of steel and ~~cast iron~~ columns are given. Standardisation of distillation plates on coke oven works and particularly on new works is recommended. This will lead to standardisation of the distillation columns which will simplify training of personnel with a general improvement in operation. There are 13 figures and 3 references including 2 Slavic.

ASSOCIATION: Kharkov's branch of NIIKhIMMASH. (Khar'kovskiy Filial NIIKhIMMASH).

AVAILABLE:

Card 1/1

TAVANETS, S.M., inzh.; SHUYER, L.A., inzh.; REMENNIK, L.M., inzh.; APANASHCHENKO,
V.G., inzh.; BRUSNITSYN, M.I., inzh.

Results of relaying railroad tracks in strip mines. Bezop. truda
v prom. 8 no.10:30-31 0 '64. (MIRA 17:11)

SHUYEV, M.T. [Shuiev, M.T.], mekhanik

Vacuum-regulator on a tractor. Mekh. sil'. hosp. 14 no.6:23
Je '63.

(MIRA 17:3)

1. Belokurakinskogo otdeleniya "Sil'gosptekhniki" Luganskoy oblasti.

KOZYULEV, G.I., inzh.; SHUYEV, S.I., inzh.

Utilization of the heat of scavenging water. Prom. energ. 18
no.11:6-7 N '63. (MIRA 16:12)

S/229/63/000/002/002/002
E081/E141

AUTHORS: Shuygin, F.P., Engineer, and
Shchukina, Ye.N., Candidate of Technical Sciences

TITLE: Fatigue characteristics of aluminium alloys used in
ship construction

PERIODICAL: Sudostroyeniye, no.2, 1963, 47-51

TEXT: Fatigue tests up to about 10^7 cycles on the aluminium alloys AMg-5B, AMg-61 and Al-Zn-Mg, are described and discussed. The results are compared with those of previous workers to assess the effect of various types of welded joint on the fatigue strength. The effect of exposure to sea water on the fatigue strength is also measured. Conclusions: the alloy Al-Zn-Mg has most favorable fatigue properties, both welded and unwelded; the best type of angle welded construction investigated was a double sided continuous seam; welded construction in aluminium alloy is particularly sensitive to stress concentration; coatings which protect aluminium in ships against sea water also prevent any adverse effects on fatigue properties. There are 6 figures and 2 tables.

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10

Cyclopentylidenecyclopentane and its relation to catalytic hydrogenation. N. D. ZILINER AND N. I. BAYAN. *J. Russ. Phys. Chem. Soc.* 62, 1343-54 (1930); cf. *C. A.* 25, 1513. After the failure to obtain 1,1-dihydroxydicyclopentyl (dinacol of cyclopentanone) for the prepa. of spirocyclohexane (*C. A.* 24, 76), the attempts to obtain the pinacol from cyclopentylidenecyclopentane (I) by oxidation with BrO_3H , or to convert I into the glycol with KMnO_4 , have also met with negative results. The hydrogenation of I in presence of Pt-C produced a satd. hydrocarbon different from the expected dicyclopentyl (II). These 2 negative results have led to an investigation of the starting product, cyclopentylidenecyclopentanone (III). III was prepd. by Wallach's method (*Ber.* 39, 2666 (1906)), and by dehydrating cyclopentanone (IV) vapors with Al_2O_3 at 200° . Of interest is a large increment in the mol. refraction of III, while I derived from III shows considerable optical decrement. The high coeff. of refraction of III may indicate that a considerable part of III is present in tautomeric (end) form. The relation of the structures of III and I may be elucidated by decoupling of the hydrogens of III in the presence of Pt, whereby instead of substitution of H_2 for N at the C bearing O, the reaction probably proceeds by way of an intermediate pyrazoline to a tricyclic spiro-hydrocarbon:

$$\begin{array}{ccc} (\text{CH}_2)_5\text{C}:\text{C}:\text{CH}_2\text{CH}_2 & \longrightarrow & (\text{CH}_2)_5\text{C}-\text{CH}:\text{CH}_2\text{CH}_2 \\ \text{H}_2\text{N}:\text{C}-\text{CH}_2 & & \text{HN}:\text{N}:\text{C}-\text{CH}_2 \end{array}$$

$\longrightarrow (\text{CH}_2)_5\text{C} \begin{array}{c} \text{CH}-\text{CH}_2 \\ \text{CH}-\text{CH}_2 \end{array} \text{CH}_2$ (V). 1,1-Tetramethylenecyclohexane (V) reacts with Br and KMnO_4 as an unsatd. compd., and with BrO_3H not at all. By catalytic reduction must be formed a satd. hydrocarbon $\text{C}_{10}\text{H}_{18}$, spirocyclohexane, $(\text{CH}_2)_5\text{C}-(\text{CH}_2)_5\text{CH}_2$ (VI), which evidently undergoes isomerization to methylspirocyclohexane, $(\text{CH}_2)_5\text{C}:\text{CHMe}:\text{CH}_2\text{CH}_2\text{CH}_2$ (VII). The phys. properties of V are almost identical with those of IV, and greatly different from those of II. *Exptl. part.*—The prepa. of III from IV with such agents as alc. EtONa (Wallach), solid KOH, alc. KOH, or

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KCN gives up to 40% of higher condensation by-products, while passing vapors of IV over Al_2O_3 at 200° results in a 41% yield of III with practically no formation of by-products. A mixt. of IV and concd. alc. KOH is allowed to cool, then heated 1.5 hrs. on the water bath, treated with H_2O , the oily layer extd. with Et_2O , dried with solid KOH, the Et_2O expelled, and distd. in vacuo, b_p $116-8^\circ$, n_D^{20} 1.5211, d_4^{20} 1.0172; calms m. $128-3^\circ$; semicarbazone, m. $167-70^\circ$ (decomps.); hydrazone, m. $88-94^\circ$ (decomps.). III obtained by heating IV 6 hrs. with 10% solid KCN, n_D^{20} 1.5186, d_4^{20} 1.0172, b_p $118-81^\circ$, b $252-4^\circ$. The fraction b_p $185-200^\circ$ on re-cryst. from H_2O m. $83-4^\circ$ and analysis for a compound to which Wallach ascribes the m. p. $76-7^\circ$, and the formula $(CH_3)_2C(CO_2C(CH_3)_3)_2$. V, obtained by distg. the hydrazone of III in

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 $\begin{array}{c} CH_3-CH_2 \\ | \\ CH_2-CH_2 \end{array}$
 presence of KOH and Pt, treating with dil. $AcOH$, washing with H_2O to a neutral reaction, drying with K_2CO_3 and twice distg. over metallic Na, colorless liquid, reacting with $KMnO_4$ and Br, b_p $189-90^\circ$, n_D^{20} 1.4884, d_4^{20} 0.8134. V produces with $KMnO_4$ no pinacol, and does not react with BrO_3H . By passing V 3 times over Pt-C at 180° and subsequently distg. over Na is obtained VII, b_p $184-5^\circ$, n_D^{20} 1.4708, n_D^{25} 1.4701, d_4^{20} 0.8728, which reacts with $KMnO_4$ very slowly, and on dehydrogenation over Pt-C at 300° shows no change. 1-Cyclopentenylcyclopentane (VIII), was obtained by dehydrating cyclopentyl-2-cyclopentanol (IX), prepd. by reduction of III with Na in aq. Et_2O , b_p $189-91^\circ$, n_D^{20} 1.4853, d_4^{20} 0.8888, reacts with $KMnO_4$ and Br, and when reduced over Pt-C at 180° gives II. Cyclopentyl-2-cyclopentanone (X), obtained when 36 g. of IX is mixed with 80 cc. of 80% $AcOH$, to which is added 17 g. of CrO_3 in 80 cc. of H_2O , the whole is heated 30 min. on the water bath, dild. with H_2O , the oily layer sep'd, washed with H_2O , dried with calcined K_2CO_3 , and redistd., b_p $111-3^\circ$; semicarbazone, m. 210° , d_4^{20} 0.9748, n_D^{20} 1.4783. Preps. of II. The hydrazine was prepd. by heating on the water bath 28 g. of X with 11.5 g. of $N_2H_4 \cdot H_2O$ in alc., the crude product was decomposed with KOH in presence of Pt powder, dried with $CaCl_2$ and redistd. over Na, b_p $188-90.5^\circ$, d_4^{20} 0.8652, n_D^{20} 1.4658. CHAS. BLANC

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Bicyclic hydrocarbons. Cyclohexylidenecyclohexane and bicyclohexyl. N. D. ZILINER, N. I. SMULIN and L. M. FAYEV. *J. Gen. Chem.* (U. S. S. R.) 2, 671-MU (1932); cf. C. A. 25, 2420. —It was shown before that the hydrazones of cyclopentylidenecyclopentanone, $\text{CH}_2(\text{CH}_2)_4\text{C}:\text{C}:\text{CO}(\text{CH}_2)_4\text{CH}_2$ (I), by decomp. with powd. Pt

and KOH gives not the expected cyclopentylidenecyclopentane, but 1,1-tetramethylenebicyclohexane. A similar reaction with the hydrazones of cyclohexylidenecyclohexanone (II) proceeds normally with the formation of cyclohexylidenecyclohexane (III). The peculiar reaction of I is attributed to a specific function of the pentacyclic ring. Pure III was used in the new method for prepa. of bicyclohexyl (IV). Schenath and Görg (C. A. 18, 346) reported the isolation of "3 spatial isomers" of IV, bms 210-21°, 227-8° and 235-7°, resp., having their conclusion on the theory of Sachse (*Ber.* 23, 1263(1890)) and Mohr (C. A. 13, 2661). Häckel, et al. (C. A. 24, 3113) showed that by dehydration of *trans*-*o*-cyclohexylcyclohexanol with ZnCl_2 is formed 1-cyclohexylcyclohexane together with 15% of an isomerization product, which is considered to be 1-hexahydrobenzylcyclopentene. The latter gives by reduction hexahydrobenzylcyclopentane, which explains the 3 pseudoisomers of IV of S. and G. In the dehydration of *o*-cyclohexylcyclohexanol (V), with such a highly isomerizing agent as ZnCl_2 there is possible an isomerization of a different type with formation of 1-cyclohexyl-2-methylcyclopentene (VI), which was obtained by dehydration of 2-methyl-1-cyclohexyl-1-cyclopentanol (VII), traces of which present in IV will depress its phys. consta. bms 225.6-7°, n_D²⁰ 1.4701, d₄²⁰ 0.8442, as compared with the consta. of $\text{C}_{12}\text{H}_{20}$ obtained by the same method, bms 236.5-1100, n_D²⁰ 1.4842, d₄²⁰ 0.8012, m. —12°. Wallach's IV must be a mixt. of IV with its products of isomerization. IV was obtained by dehydration of 1-cyclohexylcyclohexanol (IX) and reduction of the resulting *o*-cyclohexenylcyclohexane (X) (Sabatier and Murat, C. A. 6,

2002). b. 238°, n_D^{20} 1.4794, d_4^{20} 0.8857. Thus the properties of the 3 preps. of IV obtained by different methods, and the results of H. and N. (l. c.) do not seem to indicate the existence of stereoisomeric forms of IV. However there were obtained 3 preps. of IV differing considerably from those described above, which precludes a pos. denial of the possible existence of spatial isomers of IV. *Exptl. part.*—II, obtained by passing dry HCl into cyclohexanone in Et₂O with cooling, and decaying, the cryst. mass of 1-cyclohexyl-1-chloro-2-cyclohexanone with 20% KOH, bp 140–50°, n_D^{20} 1.5008, d_4^{20} 1.0043, mol. refr. 52.99, calcd. 52.78; amorphous, m. 180–80°. III, prepd. from the hydrazine of II by repeated distn. over 5% solid KOH in the presence of platinumized kieselguhr, bp 236–7°, n_D^{20} 1.4665, d_4^{20} 0.8109, mol. refr. 52.60, calcd. 52.75. V was prepd. by reducing with Na II or cyclohexanone, bp 181–3°, n_D^{20} 1.5063. In the reduction the CO group of II is reduced to alc. before the mtn. of the double bond, with formation of α -cyclohexylidenecyclohexanol, bp 152–3°, n_D^{20} 1.5088, d_4^{20} 1.0014, mol. refr. 53.75, calcd. 54.27. The action of HI on V at various temps.—(a) A mixt. of 25 g. non-cryst. V and 3 vols. of HI (d 1.02) was heated 24 hrs. at 100–10° in a sealed tube, then the iodide was treated in the cold with Zn dust in the presence of HI, and heated, the hydrocarbon distd.

PROCESS AND PROPERTIES INDEX	
<p>off with steam, twice redistd. over Na, passed over Pt-ashbestos in H at 210-5°, and again distd. over Na, m. -12°, b.p. 226-4°, n_D²⁰ 1.4642, d₄²⁰ 0.8012, mol. refr. 53.36, calcd. for C₁₁H₁₆ (IV) 53.22. Its working with H₂ (d. 1.82) as described above there was obtained the identical product. Dehydrogenation over Pt-ashbestos at 200° produced only Ph₂ crystals from alc. m. 69-70°. (b) A mixt. of 40 g. cryst. V and 4 vols. of H₂ was heated 9 hrs. at 240-50° in a sealed tube, producing a hydrocarbon without a const. m. p., which, repeatedly redistd., gave 1.5 g. b. 231-5° (cor.), n_D²⁰ 1.4663, d₄²⁰ 0.8000, mol. refr. 53.54, and 16 g. b. 253-4° (cor.), n_D²⁰ 1.4731, d₄²⁰ 0.8703, mol. refr. 53.14; neither fraction crystallized at -20°. The main fraction dehydrogenated at 200° over Pt-C produced chiefly Ph₂, the unreacted part (3 g.) reduced with Pt-C, b. 225-7° and analyzed for C₁₁H₁₆. (c) A mixt. of 300 g. cryst. V and 3 vols. of H₂ was heated 9 hrs. at 240-40° and repeatedly redistd., producing 3 fractions: 3 g., b. 200-21°, n_D²⁰ 1.4677, 16 g., b. 223-8°, n_D²⁰ 1.4728, and 65 g., b. 220-4°, n_D²⁰ 1.4763. Subjected to exhaustive dehydrogenation over Pt-C, the 1st fraction remained unchanged, while the other 2, contg. considerable IV, gave good yields of Ph₂, which was frozen out and filtered off at -10°, and the residue passed over Pt-C at 210-20°, then repeatedly redistd., giving 3 fractions: 1 g., b. 193-9°, n_D²⁰ 1.4600, 1.5 g., b. 210-6°, n_D²⁰ 1.4675, and 5 g., b. 226-8.5°, n_D²⁰ 1.4729, d₄²⁰ 0.8718, mol. w. 53.45. None of the fractions solidified at -20°. The properties of the fraction b. 226-8.5° indicate its intermediate position between 3,3-dimethylbicyclopentyl, b. 213-5°, n_D²⁰ 1.4562, d₄²⁰ 0.8483, and IV, and is considered as consisting chiefly of methylcyclopentylcyclohexane, i. e., a product of a profound isomerization of some</p>	

cycle in IV. VII was obtained in 30 g. yield together with other condensation products from 100 g. 2-methylcyclopentanone and $\text{C}_6\text{H}_5\text{MgBr}$; VII b, 110°, n_D²⁰ 1.4683, d₄²⁰ 0.8644, mol. refr. 55.15, calcd. for $\text{C}_{11}\text{H}_{16}\text{O}$ 54.74. VII treated with KHSO_4 at 180-90° produced VI, b, 228-30°, n_D²⁰ 1.4680, d₄²⁰ 0.8609, mol. refr. 53.08, calcd. for $\text{C}_{11}\text{H}_{16}$ 52.75. VI reduced over Pt-C at 200° produced VIII, redistd. over Na, b₁₀ 225.5-7°, n_D²⁰ 1.4701, d₄²⁰ 0.8640, mol. refr. 53.30. VIII does not solidify at -20°, and closely resembles the fraction b, 226.8° obtained by the interaction of V and III at 200-201°. III, subjected to 4 hydrogenations at 200° over Pd-asbestos at a rate of 4-5 drops a min., produced IV, b₁₀ 235.5-7°, n_D²⁰ 1.4785, d₄²⁰ 0.8656, mol. refr. 53.16. IV does not react with KMnO_4 , and is converted to Ph₂ by dehydrogenation with Pd-asbestos at 305° in a weak current of H. IX was obtained by interaction of $\text{C}_6\text{H}_5\text{MgBr}$ and cyclohexanone. From 120 g. bromocyclohexane resulted 50 g. IX, b₁₀ 124-5°, b₁₀ 128-9°, and 14 g. IV, b, 237.5-8°, m. -12°, n_D²⁰ 1.4842, d₄²⁰ 0.8614, mol. refr. 53.35. IX, heated with KHSO_4 at 180-90°, produced X, b, 238.5°, b₁₀ 105° and b₁₀ 100°, n_D²⁰ 1.4686, d₄²⁰ 0.8609, mol. refr. 52.80, calcd. for $\text{C}_{11}\text{H}_{16}$ 52.75. X reduced at 230-5° over Pt-C produced IV, b, 237.5° (cor.), m. 3.5-4°, n_D²⁰ 1.4794, d₄²⁰ 0.8647, mol. refr. 53.24.

CHAS. BLANC

PROCESSING AND PROPERTIES INDEX	
10	<p>Nuclear hydrogenation of furan with osmium catalyst. N. D. Zelinskii and N. I. Shubin: <i>Compt. rend. acad. sci. U. R. S. S. (N. S.)</i>, 1955, 40-3 (in German 64-5).—Hydrogenation of furan and its derivs. in the vapor phase with Ni catalysts opens the ring and forms alc. and satd. hydrocarbons. At high pressures the ring is reduced with difficulty. Cu is not a suitable catalyst for nuclear reduction. With Pt(η) alc. fufural has been previously reduced to tetrahydrofurfuryl alc. accompanied by pentane-1,2-diol, pentane-1,5-diol and pentan-1-ol. With the aid of of Pt-charcoal $C_{10}H_{12}OCH_2OH$ has been reduced to $C_{10}H_{18}OCH_2OH$. Below 100° 20% Pt-activated charcoal or 10% Pt-asbestos have very little effect on sylvan (I) in the vapor phase. A 4-fold repetition at 180° over 20% Pt-charcoal gave a mixt. of tetrahydrofuran, tetrahydroisylvan, butan-2-ol and pentan-2-ol. Furfural was converted according to the method of Wolff (C. A. 7, 790) into I, which after distn. gave $C_{10}H_{18}O$, b.p. 63.4°, d₄²⁰ 0.9130, n_D²⁰ 1.4341, M. R. 23.41 (calcd. 23.41). I was vaporized at 10-2° and carried at the rate of 4-5 drops per min. in a stream of H over a 25-cm. layer of loosely packed 25% Os-asbestos in an 8-mm. glass tube. The reduced material was collected in a chilled receiver. It showed little change of n on a repetition of the reduction process. The product after distn. over Na gave tetrahydroisylvan, $C_{10}H_{18}O$, b.p. 78.5-80°, d₄²⁰ 0.8552, n_D²⁰ 1.4072, M. R. 24.73 (calcd. 24.78). Thus Os is a unique catalyst for the smooth hydrogenation of furan derivs. in the vapor phase without ring cleavage. C. R. Addinall</p>
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION	
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PROCESS AND PROPERTY INDEX																									
1ST AND 2ND ORDERS													3RD AND 4TH ORDERS												
<p><i>ca</i></p> <p>Kinetics of the catalytic dehydrogenation of methylcyclohexane on a nickel-aluminum oxide catalyst. A. A. Bolandin and N. I. Shuikin. <i>Acta Physicochim. U. R. S. S. R.</i> 1, 200-11 (1934) (in German).—By the same method as for dimethylcyclohexane (C. A. 28, 7127⁹) the energy of activation for mixts. with 0-40% toluene is 12,300 cal. and the value of k_0 in the equation of $k = k_0 e^{-E/RT}$ is 5.8×10^6 in the temp. range 200-85°. Decompos. with methane formation is negligible except in the toluene-rich mixts. The toluene half period of adsorption is greater than that for methylcyclohexane and slightly decreases the rate of dehydrogenation. The catalyst was prepd. by reduction of the mixed oxides dried at 120° (Zelinski and Kommarevski, C. A. 10, 2945) by first dehydrating at 250° and then slowly raising the temp. to 350° over a period of 30 hrs. The activity of the catalyst is slightly less than that of pure Ni reduced at lower temp. but retains its activity much longer. The velocity of reaction is slightly greater than for cyclohexane.</p> <p style="text-align: right;"><i>2</i></p> <p style="text-align: right;">F. H. Rathmann</p>																									
<p>ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION</p>																									

1ST AND 2ND GROUPS										3RD AND 4TH GROUPS									
PROCESSES AND PROPERTIES INDEX																			
<p><i>Handwritten:</i> 10</p> <p><i>Printed:</i> $\Delta^{5,10}$-octahydronaphthalene. Isomerizing action of zinc chloride in dehydration of 2-cyclopentylcyclopentanol. N-1. <i>Summary:</i> Sci. Reps. Moscow State Univ. 1934, No. 3, 197-202. — 2-Cyclopentylcyclopentanol and $ZnCl_2$ (180°; 2 hrs.) yield $\Delta^{5,10}$- and $\Delta^{5,10}$-octahydronaphthalene (I), which with HBr yields 9-bromodecahydronaphthalene. At this yields pure I when boiled with $EtOH-KOH$. B. C. A.</p>																			
<p>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>																			
1ST AND 2ND GROUPS										3RD AND 4TH GROUPS									
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ca

A peculiar conversion of cyclohexane in the presence of a nickel catalyst N. D. Zelinskii and N. I. Shufkin. *Compt. rend. acad. sc. U. R. S. S. J.*, 255 7 (in German, 258) (1934). —In the presence of a Ni catalyst pptd. on Al(OH)₃, cyclohexane (I) in H₂ atm. at 330–50° undergoes a peculiar conversion with the formation of complex hydrocarbons. Along with a dehydrogenation of I to C₆H₆ a deep-seated cleavage takes place with the formation of free CH₃ radicals. These are, in part, reduced to CH₄ and in part combine with the C₆H₅ and the unaltered I to form toluene, xylene, methylcyclohexane and dimethylcyclohexane.
C. R. Addinall

1ST AND 2ND ORDERS		PROCESS AND PROPERTIES INDEX		3RD AND 4TH ORDERS	
<p><i>ca</i></p> <p>Catalytic aromatization of Novo-Bogutinsk (Emba) naphtha. N. D. Zelinakii and N. I. Shaikin. <i>J. Gen. Chem.</i> (U. S. S. R.) 4, 901-5 (1934).—The naphtha fraction (I) of Novo-Bogutinsk petroleum amounts to 43% of the crude oil. A sample of I was desulfurized with $HgCl_2$, dried over $CaCl_2$ and fractionated over Na</p> <p>with a long Vigreux column. Aromatic compds. (II) were detd. in each fraction by two methods. In the fractions b. 90–175°, II amounted to 89.4%. The various fractions from I were dehydrogenated over Pt on activated C (30%) in a Cu tube of internal diam. 20 mm. The tube was filled successively with 10 g. catalyst (14 cm.) to remove traces of S, a spiral of Ag wire (4 cm.), and 20 g. catalyst (26 cm.) for the dehydrogenation. Forty-five</p> <p>g. of the naphtha fraction was passed 3 times through the tube at 300° in very dil. H_2 at 0.5 cc./min. No olefins were formed. Mech. losses were 3–5%. The increases in II in the several fractions varied from 5.5 to 19.0%, the largest observed being with the fraction b. 90–110°. Dehydrogenation was practically complete after the 1st passage. The same fractions from I were also dehydrogenated with 40 g. Ni (80 cm.) on Al_2O_3 (Zelinakii and Komarevskii, <i>C. A.</i> 18, 2845) in a glass tube of internal diam. 16 mm. under the same exptl. conditions as in the Pt-on-C expt. The catalyst dried at 120° had high activity after reduction in a stream of H_2 at 350°, methylcyclohexane being completely dehydrogenated after one passage. No olefins were produced. Mech. losses amounted to 9–10%. The yields of II were 1–2.5% higher with the Ni catalyst. The naphtha remaining after removal of II produced by catalysis had a lower refractive index and b. p. than before dehydrogenation. The II contents of some other naphthas were increased from 1% to 52.6–59.3% by treatment with the Ni catalyst in a Cu tube. Tables of data are given. Novo-Bogutinsk naphtha is poorer in hydroaromatic compds. than other varieties. It is a good com. source for II.</p> <p style="text-align: right;">Lewis W. Butz</p>					
<p>ASD-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>					

CA

2

The comparative action of mixed catalysts in the simultaneous dehydration of ethyl alcohol and ammonia N.I. Shuikin, A.A. Balandin and Z.I. Plotkin. J. Gen. Chem. (U.S.S.R.) 4, 1444-50 (1934).- The dehydrating action of mixed catalysts contg. Al_2O_3 with one other oxide was compared with that of pure Al_2O_3 . The dehydration of 1:1 mol. mixt. of $\text{C}_2\text{H}_5\text{OH}$ and NH_3 was studied. The mixed catalysts contained 10% Fe_2O_3 , 20% Cr_2O_3 , 10% SnO and 10% ZnO , resp. the reaction temps. were 300°, 330°, 360°, and 400°. The reaction vessel was a glass tube 18 mm. in diam. contg. a layer of catalyst, dried at 160°, 30 cm. long. The NH_3 was introduced at a rate of 55-60 cc./min. and the alc at 1.6 cc./10 min. In each expt. 20 cc of alc. was passed. In 2 expts. C_5H_{11} derive. were formed. With Al_2O_3 - Fe_2O_3 at 360° and 400° the yield of amines was the same as with Al_2O_3 . In the case of all the other mixed catalysts the rate of amine formation was lower and the rate of alc. dehydration higher. The properties of the mixed catalysts cannot be regarded as a summation of the properties of the component oxides.

A 50-51 A METALLURGICAL LITERATURE CLASSIFICATION

The data are discussed from the viewpoint of the multiplet theory.

Lewis W. Buts.

2c

ca

The comparative action of mixed catalysts in the simultaneous dehydration of ethyl alcohol and aniline. The catalytic preparations of ethylaniline. N. I. Shuikin, A. A. Balandin, and P. T. Duimov. J. Gen. Chem. (U. S. S. R.) 4, 1451-7 (1934).--The dehydration of a 2:2.9 mol. mixt. of PhNH₂ and alc. was studied with the same catalysts as were used for alc. and NH (cf. preceding abstract) and in addn. with Al₂O₃ (95%) - NiO (5%). The temps were 350° and 400°. The PhNH₂-alc. soln. was introduced into the reaction vessel at the rate of 12 cc./hr. The Results follow:

Catalyst	Temp. of max. conversion of PhNH ₂	PhNH ₂ Converted	Yield of PhNH ₂	Yield of PhNH ₂
Al ₂ O ₃	350°	67.5	64.3	3.2
Al ₂ O ₃ -Fe ₂ O ₃	350°	52.9	52.2	0.7
Al ₂ O ₃ -SnO	350°	50.2	48.7	1.5
Al ₂ O ₃ -Cr ₂ O ₃	350°	43.2	43.2	traces
Al ₂ O ₃ -NiO	350°	38.5	38.4	0.1
Al ₂ O ₃ -ZnO	350°	31.6	31.6	traces

PhNH₂ with alc. is dehydrated at a higher rate than NH under the same condition.
Lewis. W. Buts.

ASH 35.4 METALLURGICAL-LITERATURE CLASSIFICATION

CA 70

PROCESSES AND PROPERTIES INDEX

Catalytic hydrogenation of teluene with combined hydrogen. N. I. Shuikin and E. A. Feder. *J. Applied Chem.* (U. S. S. R.) 7, 1192-6 (1934).—PhMe is hydrogenated by 1 passage together with EtOH vapors at 170-210° over Ni pptd. on Al₂O₃, whereby methylcyclohexane is mtd. and EtOH dehydrogenated. The best process temp. is 190° and the yield of methylcyclohexane is then 20% of the theory at an aldehyde-PhMe ratio of 9:1. Similar results are obtained in the dehydro-hydrogenation of PhMe-EtOH at 180-190° in the presence of Pt pptd. on asbestos. A. A. Buchaling

ASM S L A METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSES AND PREPARATION																										PROCESSES AND PREPARATION																									
<p>Reports of investigations carried out by N. D. Zetinskii on the catalytic aromatization of petroleum. P. P. Borisov and N. I. Shuikin. <i>Nefteyanoe Khozyaistvo</i> 26, No. 3, 42-3 (1974).—A review covering Z.'s 60 years' research activities, including some of his unpublished works. A. A. Bochtlingk</p>																																																			
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			
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Hydrogenation by catalysis of fractions of Baku (Surakhany) gasoline. N. D. Zelinskii and N. I. Shulkin. *Bull. acad. sci. U. R. S. S.* 1935, 229-37 (in English 237); *Ind. Eng. Chem.* 27, 1209-11 (1935); cf. C. A. 29, 2721.
Cyclohexane and its derivs. (about 50%) in gasoline fractions b. 75-125° and 118-140° are almost completely hydrogenated to aromatic compds. by passage with H at 300° over Ni on Al_2O_3 or Pt on charcoal. The catalysts remove the traces of S present, but are not poisoned thereby. The aromatic contents of mixts. detd. by the H_2SO_4 and the $PhNH_2$ methods agree. H. A. Beatty

Catalytic desulfurization of gasolines from Barzass apatopelites and Kashpira shales at ordinary pressure. I. N. Iuz, N. I. Shukhin and P. F. Epifanskii. *Neftekhimiya*, 28, No. 7, 1962, 1284-1285. The desulfurization of the gasolines was carried out in the presence of H_2 and a catalyst which was prepd. from $Ni(NO_3)_2$ and $Al(NO_3)_3$ by treating with caustic soda to slightly alk. reaction (to ppt. the hydroxides). The product was washed with water and reduced in a stream of H_2 . The desulfurization was and reduced in a stream of H_2 . The desulfurization was undertaken with gasoline contg. up to 10.98% S. A complete desulfurization was obtained with gasolines low in S, while those high in S needed a repeated treatment. The catalyst was poisoned after a comparatively short time. The best temp. was 400° , although it caused the formation of unsatd. compds, and a loss in the gasoline yield. A. A. Bochtlingk

The recovery of nickel catalyst poisoned during desulfurization of Ishimbayev crude oils. I. N. Titz and N. I. Shufkin. *Neftyanoe Khimichestvo* 29, No. 9, 55-7 (1935).
 A Ni catalyst pptd. on Al_2O_3 and poisoned in the desulfurization of the kerosene fraction from Ishimbayev crude oil (high in S) with H was oxidized with O at 350-400° and reduced with H at 350-400°. A considerable part of its activity was regained. The regeneration proceeds with greater ease with catalyst low in Ni. The generation of H_2S during the desulfurization carried out in the presence of a regenerated catalyst sets in on passing a considerably smaller amt. of kerosene in comparison with a freshly prepd. catalyst. Five references. A. A. Boettling

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

ca

10

Catalytic hydrogenation of furan. Tetrahydrofuran.
N. I. Shulkin and E. M. Chilikina. *J. Gen. Chem.*
(U. S. S. R.) 6, 279-82 (1936).—Tetrahydrofuran (I)
resulted in 100% yield by a 2-stage hydrogenation of furan
in the presence of 25% Os-asbestos catalyst at 65-70°. I,
bp 35-5.2°, d_4^{20} 0.9097, n_D^{20} 1.409, M. R. 20.41 (obs.), M. R.
20.12 (calcd.), passed in a weak current of H₂ or CO, over
Pt (pallad), on active C or asbestos at 300-5° showed no
traces of dehydrogenation. I failed to react with 3 parts
of 15, 30 and 60% H₂SO₄ by refluxing or heating the mixts.
in sealed tubes at 110° for 6 hrs. Chav. Blanc

Chas. Blanc

ASB-32A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

10

Influence of substituents on the velocity of catalytic dehydrogenation of cyclohexane derivatives. II. A. A. Belandin and N. I. Shukhin. Sci. Repts. Moscow State Univ. 1936, No. 6, 261-6. The velocity of dehydrogenation of methylcyclohexane at 200-60° (Ni-Al₂O₃ catalyst) is slightly more than that of cyclohexane. B C A

ASAC SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

Alkylation of aniline in the presence of mixed catalysts
 III. The catalytic production of methylaniline and ethyl
 aniline. N. I. Shukhin, A. N. Birkova and A. E. Erm
 lina. *J. Gen. Chem.* (U. S. S. R.) 6, 271 (1936), 11
 C. A. 30, 3955. PhNH₂ is alkylated with 2 mols. of abs.
 MeOH or EtOH by conducting the mixt. over Al₂O₃, Fe₂O₃,
 or mixts. of Al₂O₃ with 10-90% Fe₂O₃ at a rate of 12 cc. hr.
 and 350° and 375°. The catalysts are prepd. by pptg.
 Al₂(SO₄)₃, FeSO₄ or their mixts. with 25% NH₄OH, form-
 ing the washed pptts. into thin sausages and drying at
 150° to a const. wt. Al₂O₃ is the most active catalyst,
 giving a mixt. of mono- and dialkylaniline. With the
 addn. of 10% Fe₂O₃ the formation of dialkylaniline is
 eliminated. Fe₂O₃ and the mixed oxides act most mildly,
 giving only monoalkylaniline. The alkylation proceeds
 at a greater rate than the methylation, but is accompanied
 by large loss of alc. because of the dehydration and de-
 hydrogenation. Max. yields are obtained of 45.1 and
 43.8% PhNHMe with mixts. of equal parts of Al₂O₃ and
 Fe₂O₃, and of 59.7 and 57.5% PhNHEt with 60 and 70%
 Fe₂O₃ at 350° and 375°, resp. Chas. Blanc

Catalytic aromatization of narrow fractions of Nutch o
 hanskii and Balakhanskii benzines. N. D. Zelinskii and
 N. I. Shufkin. *J. Applied Chem.* (U. S. S. R.) 9, 290-7
 (in German 268) (1936); cf. *C. A.* 29, 2721, 6214.
 The dehydrogenation of benzine fractions at 300-400° by
 the method previously described in the presence of Pt on
 activated C and Ni on Al_2O_3 proceeds smoothly in glass,
 Al, Cu and Fe tubes. Exhaustive dehydrogenation of the
 fractions, b. pts 2° and 110 A 21.4° in the presence of
 Pt catalyst at 300° gave catalysts contg. 65 and 78%
 aromatic hydrocarbons, resp. The dehydrogenation with
 the Ni catalyst above 300° gave catalysts with abnormally
 high contents (up to 84%) of aromatic compds. This is
 explained by the presence under these conditions of a
 secondary process of aromatization as a result, probably,
 of a reaction of thorough isomerization with formation of
 new hexamethylene rings. Chas. Blanc

PROCESSING AND PREPARATION INDEX																									
1ST AND 2ND GROUPS													3RD AND 4TH GROUPS												
<p>The peculiar contact-catalytic transformations of hydrocarbons of six-membered rings. N. I. Shulkin. <i>J. Gen. Chem.</i> (U.S.S.R.) 7, 1015-21(1937); cf. C. A. 28, 7250. Under the same conditions as previously used, methyl- and dimethyl-cyclohexanes over Ni at 300-50° give <i>p</i>-xylene and C₆H₆, resp., as well as undergoing normal dehydrogenation, and splitting off of Me groups to form C₆H₆ and MePh. The splitting reaction predominates over the synthetic one. At 375° cyclohexane forms MePh, but no xylene, as it does at lower temps. This is due to loss of activity by the catalyst due to formation on it of a C film. At 400° cyclohexane splits completely to gaseous products. Over a Pt catalyst at 330-75° no synthetic reactions occur, and the products from cyclohexane are C₆H₆ and Ph₂. Both the alicyclic and aromatic rings can undergo the synthetic reaction. H. M. L.</p>																									
<p>ALSO SEE METALLURGICAL LITERATURE CLASSIFICATION</p>																									
1ST GROUP													2ND GROUP												
1ST GROUP													2ND GROUP												

The hydrogenation of furan and its alkyl derivatives in the presence of a palladium catalyst. N. I. Shulkin, V. I. Nikiforov and P. A. Stolyarova. *J. Gen. Chem.* (U. S. S. R.), 7, 1591 (1937), cf. C. A. 30, 1820. Furan and its α -Me, α,α -di-Me and α -Et derivs. hydrogenate smoothly to the tetrahydro compds. when passed with H at 150-20° over Pd deposited on asbestos. The Et and Me₂ compds. are harder to hydrogenate than the others, and the catalyst becomes fatigued during their treatment. It can easily be regenerated with H, however.

H. M. Lancaster

H. M. Leicester

ASME.3LA METALLURGICAL LITERATURE CLASSIFICATION

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50
 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

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 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

CA

10

PROCESSES AND PROPERTIES INDEX

Destructive catalytic hydrogenation of xylene and solvent-naphtha. — N. I. Shashin. *J. Applied Chem.* (U. S. S. R.) 10, 652-8 (in French) (1937). — Expts. were carried out in the presence of H in a glass tube (inner diam. 16 mm.) placed in an elec. furnace (Heraeus) and filled with a catalyst (50 cm.). C₈H₈Me₂ was introduced into the reaction chamber with a velocity of 12-36 cc./hr. through the upper end of the tube and the product was collected at the cooled receiver attached to the lower end of the tube. The temp. of the expts. was 330-400°. Ni, deposited on Al₂O₃, Ni on silica and Ni on asbestos were used as catalysts, the best catalyst being Ni deposited on Al₂O₃, yielding at 375° 38.9% of C₈H₈-PhMe fraction (from C₈H₈Me₂) and causing dealkylation of aromatic hydrocarbons present in the solvent-naphtha (b. 130-230°). Destructive hydrogenation of C₈H₈Me₂ under the above conditions consisted in a consecutive demethylation with the formation of PhMe, C₈H₈, and CH₄. Twelve references.

A. A. Podgorny

ASS. S. L. A. METALLURGICAL LITERATURE CLASSIFICATION

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Catalytic hydrogenation of furan and sylvan in the presence of a nickel-aluminum catalyst. N. I. Shufkin and V. I. Bunina. *J. Gen. Chem.* (U. S. S. R.) 8, 669-73 (1958); cf. C. A. 31, 8520i. Furan and α -methylfuran hydrogenate smoothly to the tetrahydro compds. when passed with H₂ at 120-40° over a Ni-Al catalyst (27% Ni + 73% Al) activated by treatment with 10% NaOH. The catalyst showed no signs of fatigue after repeated hydrogenations. Chas. Blanc

PROCESSES AND PROPERTIES: 4094

ASB. 31.4 METALLURGICAL LITERATURE CLASSIFICATION

SECTION ONE

SECTION TWO

SECTION THREE

SECTION FOUR

SECTION FIVE

SECTION SIX

SECTION SEVEN

SECTION EIGHT

SECTION NINE

SECTION TEN

SECTION ELEVEN

SECTION TWELVE

SECTION THIRTEEN

SECTION FOURTEEN

SECTION FIFTEEN

SECTION SIXTEEN

SECTION SEVENTEEN

SECTION EIGHTEEN

SECTION NINETEEN

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1ST AND 2ND ORDERS										PROCESSES AND PROPERTIES INDEX										3RD AND 4TH ORDERS									
<div style="position: absolute; top: 10px; left: 10px; font-size: 2em;">02</div>										<div style="position: absolute; top: 10px; right: 10px; font-size: 2em;">10</div> <p>Catalytic hydrogenation of coumarone. N. I. Shulkin, I. I. Dmitriev and T. P. Isakymina. <i>J. Gen. Chem.</i> (U. S. S. R.) 10, 1037-72 (1941).—Hydrogenation of coumarone (I) was carried on by the method and with the catalysts previously described (C. A. 33, 1316²). Under all the conditions used the reaction is accompanied by partial cleavage of the furan ring and the formation of 2-ethylcyclohexanol (II) and β-cyclohexylethyl alc. (III). Passing I with H₂ over Pt deposited on asbestos at 175° formed up to 80% octahydrocoumarone (IV). H₂ and α-methyl III. In a similar reaction with the Ni catalyst the yield of II was increased to about 50% and that of IV reduced to 21-27%. The liquid-phase hydrogenation of I in EtOH, at 20-50° and atm. pressure in the presence of Pt black and platinized charcoal proceeds analogously, but with the intermediate formation of coumaran (2,3-dihydrobenzofuran). IV, <i>b_{mp}</i> 170-2°, <i>d₄²⁰</i> 0.9633, <i>n_D²⁰</i> 1.4683, M. R. 30.4. II, <i>b_{mp}</i> 182-4°, <i>d₄²⁰</i> 0.9214, <i>n_D²⁰</i> 1.4631, M. R. 38.31. III, <i>b_{mp}</i> 203-6°, <i>d₄²⁰</i> 0.9162, <i>n_D²⁰</i> 1.4643. Chas. Blanc</p>										<div style="position: absolute; right: 10px; top: 10px; transform: rotate(90deg); font-size: 0.8em;">COMMON VARIANTS NOTED</div>									
<div style="font-size: 1.5em; margin-bottom: 10px;">Lab. Org. Chem., Moscow State U.</div>										<div style="font-size: 0.8em;">8-27-47-12122</div>																			
<div style="font-size: 0.8em;">ASAC-314 METALLURGICAL LITERATURE CLASSIFICATION</div>										<div style="font-size: 0.8em;">FROM SOURCE</div>										<div style="font-size: 0.8em;">COLLECTED</div>									
<div style="font-size: 0.8em;">FROM SYNOPTIC</div>										<div style="font-size: 0.8em;">FROM MAP ONLY SET</div>										<div style="font-size: 0.8em;">COLLECTED</div>									
<div style="font-size: 0.8em;">SOURCE #</div>										<div style="font-size: 0.8em;">SOURCE MAP ONLY SET</div>										<div style="font-size: 0.8em;">COLLECTED</div>									
<div style="font-size: 0.8em;">1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</div>										<div style="font-size: 0.8em;">1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</div>										<div style="font-size: 0.8em;">1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</div>									

1ST AND 2ND ORDER										3RD AND 4TH ORDER									
PROCESSING AND PROPERTY INDEX																			
<p><i>CA</i></p> <p>The catalytic transformation of six-membered into five-membered rings. <i>M. I. Shustkin. Bull. acad. sci. U.S.S.R. Chem. ed. 1968, 640-5 (English summary).</i> Cyclohexane and C irradiated by a 1000-w. lamp give 28.4% chlorocyclopentane (I). If stronger illumination is used, the chief products are di- and poly-Cl deriva. When I is passed at 250° over Al_2O_3 contg. 10% Fe_2O_3, HCl splits out and catalyzes the isomerization of most of the cyclohexane (II) to 1-methylcyclopentane. A little 1-methyl-3-cyclopentene is also formed. When II and HCl are passed over the catalyst, isomerization occurs, but if HCl is replaced by CO_2, it does not.</p> <p>H. M. Leicester</p>																			
<p>ASS-ILA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
1ST ORDER										2ND ORDER									
3RD ORDER										4TH ORDER									

SHUFYKIN, N.I.

USSR/Organic Chemistry, Synthetic Organic Chemistry.

E-2

Abs Jour: Ref Zhur-Khimiya, No 6, 1957, 19046.

Author : Nekrasova V. A., Shufykin N. I.

Inst :

Title : The Problem of Chlorination of Alkanes in the Presence of Nitrogen Dioxide.

Orig Pub: Izv. AN SSSR, Otd. Khim, N., 1946, No 5, 583-586.

Abstract: Investigated are products obtained of the gaseous (265-400°) and liquid (123-213°) phases of chlorination of n-alkanes from n-C₆H₁₄ to C₁₂H₂₆ at molar proportion of the alkanes: Cl₂= 1:1, with a catalyst NO₂(2%), and in the presence of 1% unsaturated hydrocarbons initiating the chain reaction. Chlorination in the gaseous phase is carried out with the velocity of passing Cl₂ 1.2 liters/hours. The reaction proceeds uniformly and yields mainly primary chlorides and some secondary. At the

Card : 1/2

SHUYKIN, N. I.

"Disproportionation of Methyl groups in Xylene-Benzene system effected by Aluminum Chloride." by N. I. Shuykin and M. S. Prokhorova (p. 841)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1946, Volume 16, No. 6

SHUIKIN, N. I.

Effect of unsaturated hydrocarbons on the dehydrogenating properties of platinum catalysts. N. I. Shuikin, S. S. Novikov, and E. D. Tulyagina (Acad. Sci. U.S.S.R., Moscow). *Bull. acad. sci. U.R.S.S., Classe sci. chim.* 1947, 59-95 (in Russian). --Mixture of a previously de-aromatized gasoline fraction (b. 98-101°, n_D^{20} 1.4095, d_4^{20} 0.7219) with unsatd. hydrocarbons, in the wt. ratio hydrocarbon:gasoline = 1:10, were subjected to prolonged dehydrogenations at 300-305° on a 5% Pt catalyst on activated C, 50 cm. high, 48 g., rate of flow 1 ml./min. (space velocity ~0.5), and the activity of the catalyst before, during, and after the runs was tested by the yield y of dehydrogenation of cyclohexane (detd. by the η of the catalyzate). Cyclohexene has no effect on y , i.e., does not affect the activity and stability of the Pt catalyst. 1-Octene, 1-heptene, and 1-hexene show only a very slight inactivating effect. Marked inactivation is brought about by 1-ethyl-1-cyclopentene (y falling from 96.0 to 58.5-49.5%). Cyclohexene alone, in a slow H_2 stream, leaves the activity of the catalyst unchanged. 1-Hexene in a stream of H_2 or of CO_2 causes only a slight lowering of the activity; the products are, in the 1st case, hexane with a little 1-hexene, in the 2nd case, 2-hexene. 1-Ethyl-1-cyclopentene, 18.5 g., in a stream of CO_2 , gave 11.8 g. catalyzate, fractionated into b.m. 96-103° (0.8 g.), 103-4° (4 g.), 104-5.5° (4.5 g.), residue 0.9 g.; the 1st and 2nd fraction, treated with concd. H_2SO_4 , gave a hydrocarbon with const. close to those of

ethylcyclopentane; the 3rd fraction is mainly unchanged 1-ethyl-1-cyclopentene; the activity of the catalyst has fallen to $y = 15\%$. Allylcyclopentane, 10 g., in a stream of CO_2 , gave 10 g. catalyzate; its fraction b.m. 129-31° showed const. close to those of propylcyclopentane; the activity of the catalyst has decreased markedly. Since both ethylcyclopentene and allylcyclopentane are hydrogenated in the absence of H_2 (under CO_2), this can only take place at the expense of the H_2 liberated in the dehydrogenation of other mols. to the corresponding cyclopentadienes. Cyclopentadiene itself, 2.52 g., mixed with 15.18 g. heptane, at 300°, under a stream of H_2 , gave 16.0 g. catalyzate of which 0.8 g. was very close to cyclopentane; the activity of the catalyst has fallen to $y = 55.5\%$.
N. Thon

SHUYKIN, N. I.

"Stability of the Catalytic Properties and of the Structure of Platinized Carbon in Heat-Treatment," by S. S. Novikov, A. M. Rubenshteyn, and N. I. Shuykin. Dokl. Ak. Nauk SSSR, 62, pp 345-348, 1948.

Constancy of the catalytic activity of a 20% Pt catalyst on active C, independently of the length of heat-treatment at 300°, up to 639 hrs., was ascertained by dehydrogenation of cyclohexane to C₆H₆ at 300°, space velocity 0.4 l./l/ catalyst/hr. Under the same conditions, both the crystal lattice constant and the grain size of the Pt (~56A.) remain practically unchanged. Regeneration of a catalyst, heat-treated for 639 hrs., and used at 300° for 120 hrs., at well over 300°, restored the original activity and left the crystal size unchanged, i.e. no recrystn. took place even at red glow. Inasmuch as highly disperse Pt without carrier recrystallizes easily even at room temp., it follows that, on the carrier, Pt is not distributed uniformly, but the grains are localized in pores and completely isolated from one another.

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Hydrogenation of benzene on platinized carbon of low platinum content. A. M. Rubinshtein, Kh. M. Minachev, and N. I. Shulkin. Doklady Akad. Nauk S.S.S.R. 62, 407-9 (1948).—A series of catalysts made under identical conditions but with the Pt content decreasing, by steps, from 20% (standard catalyst) down to 0.1%, showed, in dehydrograms, systematic disappearance of high-index reflections. With increasing diln. of the Pt, the (222) plane reflection disappears first, followed, in that order, by (022), (113), and (002); the reflection on the (111) plane persists throughout, and is only weakened at the lowest Pt content. It proves that the cryst. structure is preserved even at very high diln. of the Pt on an amorphous carrier. The activities of this series of catalysts, expressed in percentage of conversion in hydrogenation of C_6H_6 , remain const. = 100% with 4-1% Pt and decrease slightly (to about 80%) with 0.5-0.1% Pt. This finding, along with the observed persistence of the (111) plane reflections, indicates that the catalytic activity of Pt on active C resides, primarily, in the (111) plane, with higher-index planes playing only a subordinate role in catalysis. It is consistent with Balandin's location of the hydrogenation-dehydrogenation catalytic activity at octahedral faces of the catalyst, and with his sextet model of plane orientation of ring-shaped mols. on those faces.

N. Thou

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Blocking of the active centers of platinized carbon by products of deep decomposition of hydrocarbons. A. M. Rubinshteyn, Kh. M. Minachev, and N. I. Shuykin, Doklady Akad. Nauk S.S.S.R. 67, 287-90 (1949); cf. C.A. 43, 1249g.- In the hydrogenation of C_6H_6 in excess H_2 at 170-20 at the space velocity 0.06 l./l. catalyst/hr., on catalysts contg. from 4.0 down to 0.03% Pt, corresponding to passing velocities from 5.5 to 540.0 ml./hr./g, Pt, some reaction took place even at the smallest Pt content; with 4.0-1.0, 0.5, 0.10, 0.09, 0.06, and 0.03% Pt, the initial degrees of conversion were, resp., 100, 88.5, 88.4, 11.2, 9.0, and 1.0%. The fall of the initial rate during the run is in inverse ratio to the Pt content. Similarly, in the dehydrogenation of cyclohexane, in a weak stream of H_2 , at 300-20 and 0.3 l. cyclohexane/l. catalyst/hr., the activity of catalysts with 4.0-0.25% Pt showed no marked differences; from 0.25% Pt down, the activity falls sharply, but even at 0.03% it still is 5% dehydrogenation. The stability of the catalysts falls sharply from Pt < 0.5% down. The curve of relative fall of the activity as a function of the Pt content starts out with an almost vertical fall at lowest Pt contents, bends at about 0.5% and then remains almost horizontal. This curve is taken to render the rate of blocking of the active centers by the decompn. products of the hydrocarbons. It thus would appear that the isolated microcrystallites that predominate at very low Pt contents are more subject to blocking than the aggregates present at high Pt contents. X-ray diagrams show that the cryst. structure of the Pt is preserved down to 0.03%, but that lattice defects, as indicated by blurring of the interference lines and by deviations from the normal value of the lattice const., increase with decreasing Pt content, i.e., with its increasing dispersity. It is possible that active centers of a new type, favorable to splitting of the six-membered ring, are formed at high deformations of the crystal lattice. At high Pt contents, there is no change of the dimensions of the crystals in

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the course of the reaction; recrystn. consists mainly in a disappearance of crystal defects. This process is less probable at lower Pt contents. Diffusion to the active centers plays only a subordinate role at high Pt contents, but becomes increasingly significant at lower contents.

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Causes of the instability of palladium catalysts in dehydrogenation catalysis. S. S. Novikov, A. M. Rubinshtein, N. I. Shuykin, and Z. Ya. Mel'nikova. Doklady Akad. Nauk S.S.S.R. 68, 1049-51 (1949)- Identical samples of P₁ on and of P₂ on silica gel were (a) subjected to prolonged heat-treatment in H₂, (b) used in dehydrogenation of cyclohexane at 300-20, 0.3 l./hr./l, (c) used in dehydrogenation of a mixt. of 90% cyclohexane with 10% 1-ethyl-1-cyclopentene, under the same conditions. The Pd-C catalyst has an initial activity by about 35% lower than the corresponding Pt-C catalyst; in a, the activity of Pd-C falls faster than that of Pt-C₁ but becomes stabilized at about 3/4 of the initial activity. The activity of Pd on silica gel is still lower than that of Pd-C, but it does not change in treatment a. In b, and even more so in c, the activities of Pd-C and Pd-SiO₂ fall rapidly; after c, the catalysts can be regenerated to some extent, but lose their activity completely in a very short time. This behavior, again, contrasts with the relative stability of Pt-C in b, if not in c. An explanation of the difference in stability between Pd and Pt was provided by x-ray patterns. Immediately after deposition on carbon, Pd shows the lattice const. of the hydride, 4.04 Å. which does not change on prolonged treatment a. Pd on SiO₂ has a normal lattice. New lines appear in the x-ray pattern of Pd-C after operation b or c; these lines, corresponding to reflections $\sin^2 \theta \approx 0.170$ and $0.281-0.287$, belong neither to Pd nor to its hydride, and are absent in the ash of the catalyst. Pd-DiO₂ shows, after b or c, an extra line $\sin^2 \theta \approx 0.285$, i.e., the same new line as Pd-C. This line, independent of the carrier, can only belong to a new cryst. phase, formed in b or c, through interaction between Pd and the hydrocarbon. As this new phase is absent in Pt catalysts, it is probable that it is responsible for the rapid fall of the activity of Pd catalysts. It can also be concluded that, at 300°, the conversion of hydrocarbons on Pd is much deeper than on Pt.

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Effect of hydrocarbons of various classes on isomerization of five membered cyclanes in the presence of aluminum chloride. N. I. Shulkin, S. S. Novikov, and E. D. Tulupova. (Acad. Sci., U.S.S.R., Moscow). *Izv. Akad. Nauk S.S.S.R., (Otdel. Khim. Nauk 1950, 278-81).*

A fraction of Baku petroleum (contg. 10 vol. % aromatics), b. 103-150°, n_D²⁰ 1.4210, d₄²⁰ 0.7610, was used as the working stock; aromatization was performed with a Pt catalyst in a glass tube at 300-35°. After aromatization the aromatics were removed by sulfonation and the aromatized product treated with AlCl₃ (5 wt. %, 1 hr., at 80°). The isomerization thus took place in the presence of alkanes only; no significant difference in the amt. of 5-membered ring compds. isomerized was found when the amt. of 6-membered cyclanes was varied from 0 to 40%. Small amts. of aromatics (about 0.2%) also have little effect, but large amts. of aromatics (18%) reduce the extent of isomerization of the 5-membered rings, probably by binding the AlCl₃ catalyst in the form of a complex. G. M. Kosolapoff

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Catalytic synthesis of cyclohexylamine. M. A. Popov and N. I. Shulkin (Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). *Izv. Akad. Nauk S.S.S.R., Khim. Nauk* 1950, 370 (1950). The yields of cyclohexylamine from mixts. of cyclohexanol and NH_3 passed at a space velocity of 0.17-0.18 l./l. catalyst hr., as a function of the temp. between 170 and 380°, were detd. on different catalysts. On Ni (10%) on silica gel, prepd. by impregnation with $\text{Ni}(\text{NO}_3)_2$, heating at 300°, and reduction with H_2 at 340°, the yield passes through a min. at about 200°. Some max. (4.2% amine N in the condensate) at 200°. Some PhNH_2 was found as side product. Best yields were obtained on platinized SiO_2 gel contg. 1.11% Pt, with a max. 3.8% amine N in the condensate, at 320-50°; this catalyst lost no activity in 20 hrs., and gave no side reactions. The ultimate yield of cyclohexylamine, under optimum conditions, mol. ratio NH_3 :cyclohexanol ≈ 3 , was 51.8% of the theory with respect to the Ni catalyst. Pd on silica gel, and active C, gave lower yields; the latter against 19.7% of the theory on 2 hrs. at 320°, but can be regenerated with H_2 vapor in 5 hrs. at 500°. The best ultimate yield on this catalyst was 22.6% of the theory with respect to cyclohexanol consumed, at 320°. Products other than cyclohexylamine are cyclohexene, H_2O , and H_2 , and, on Ni, some PhNH_2 . N. Thon

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Distribution of platinum in a platinized carbon catalyst. A. M. Rubinshtein, Kh. M. Minachev, and N. I. Shuykin (Acad. Sci., U.S.S.R.). Doklady Akad. Nauk. S.S.S.R. 71, 1073-5 (1950).- The Pt content was detd. by transmittance to x-rays of sections, taken at different depths, of cubes of platinized charcoal of 10.2-3.2 mm. side. Although the amt. of Pt is highest in the outermost layer of each grain, it is also found in deeper layers; e.g., in a cube of 10.2 mm. side, the-ratio of the amts. of Pt found in layers 0-1.2, 1.2-2.4, 2.4-3.7, and 3.7-4.9 mm. deep, was 6.7:3.6:1.1:1, and in a 4.1 mm. cube, at 0-0.85, 0.85-1.6, and 1.6-2.4 mm. below the surface, the ratio was 2.4:1.2:1. The finer the grain, the more nearly uniform is the depth distribution of the Pt. The distribution is, in a way, analogous to that produced in chromatography. Catalytic reactions can take place not only at the surface of the catalyst grain but also in its deeper layers.

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Hydrogenation of cyclenes and alkenes on low-percent
platinized carbon. Kh. M. Minachev and N. I. Shulkin

(Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 72, 61-3(1950).—C platinized with as little as 0.5% Pt hydrogenates very effectively 1-methylcyclopentene (I), 1-ethylcyclopentene (II), 1-octene (III), and $\text{Me}_2\text{C}=\text{CMe}:\text{CH}_2$ (IV). At 140°, II passed over this catalyst at a space velocity of 0.36, in a strong stream of H_2 , is converted completely into ethylcyclopentane, and I is completely converted into methylcyclopentane at 110°. III is completely hydrogenated to C_8H_{18} at 140°, and IV to $\text{Me}_2\text{CCHMe}_2$ at 120°.

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Hydrogenation and dehydrogenation of hydrocarbons with low-percent nickel catalysts. N. I. Shulkin, Kh. M. Minachev, and I. D. Rudol'stvenskaya (Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.R.* 72:911-13(1950). Catalysts with Ni contents of 0.125-4% were prepd. by 40-45 min. impregnation at 30-35° of 1 g activated charcoal with 2 ml. soln. of $Ni(NO_3)_2$, drying at 125°, and reduction in H_2 at 330°. Hydrogenation (I) of C_6H_6 was carried out in a stream of excess H_2 at 115-170°, space velocity 0.025-0.2 l./l. catalyst-hr.; dehydrogenation (II) of cyclohexane at 320-332°, space velocity 0.2-1 proceeds to a significant extent with catalysts contg. 1% Ni or more; the reaction is just barely noticeable with 0.5% Ni. In II, the initial activity of the catalyst varies very little with the Ni content varying from 0.5 to 4%, with the progress of the reaction, the

activity of the catalyst falls rapidly, by a factor of 5-1 after 200 min. In reaction I, the degree of hydrogenation is practically independent of the temp. between 120° and 170° and is not affected by a variation of the space velocity by a factor of 4; under these conditions, it attains 100%. Further increase of the space velocity, by a factor of 8, lowers the degree of hydrogenation to 68-70%. At a const. space velocity of 0.04, the activity of the 4% Ni catalyst maintains itself at a near 100% level for more than 25 hrs., and that of the 2% catalyst falls off only slowly.

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Hydrogenation of benzene and dehydrogenation of cyclohexane on nickel catalysts on activated carbon. A. M. Rubinshtein, S. S. Novikov, Z. Ya. Lapshina, and N. I. Shuikin (Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). Doklady Akad. Nauk S.S.S.R. 74, 77-9 (1950).- Hydrogenation of C_6H_6 at a space velocity of 0.06 l./hr., at 180°, and dehydrogenation of cyclohexane at 0.3, 300°, were investigated with catalysts prep'd. by impregnation of active C with a soln. of 47 g. $(HCO_2)_2Ni/l.$, and decompn. at different temps. from 250 to 670°; catalysts heated at 350° were also tested after repeated impregnation with $(HCO_2)_2Ni$, and repeated decompn. at 350°. At low space velocities hydrogenation was practically complete with all catalysts; highest activity was found with catalysts with Ni crystallites of the size of ~40 Å. In contrast thereto, the activity in dehydrogenation was found to increase with the Ni crystallite size up to 80 Å. Since these results are analogous to those observed with Ni catalysts on Al_2O_3 , it follows that the optimum grain size of the catalyzing metal does not depend on the nature of the carrier. The activity in dehydrogenation is highest with catalysts decompd. at 450°; higher decompn. temp. lowers the activity, whereas sintering in vacuo at 800° increases it considerably owing to a 1.5-fold increase of the Ni grain size.- The dehydrogenating activity increases with increasing compression of the Ni lattice. Repeated impregnation results in growth of the existing Ni grains, not in further coverage of new portions of the carrier surface; consequently, the dehydrogenating activity increases with repeated impregnations. The rapidly prep'd. Ni catalysts on active C are suitable for both dehydrogenation and, particularly, hydrogenation of six-membered rings, but their activity is inferior to that of catalysts of the Pt group.

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The nature of six-membered ring hydrocarbons of higher cuts of Makhov gasoline. N. I. Shulkin, G. B. Novikov, and I. I. Naryzhkina. *Izv. Akad. Nauk SSSR, Khim. Akad. Nauk* 1991, 115-19. -By using the techniques outlined in the preceding abstr., combined with identification of acids resulting from oxidation of various fractions, it has been shown that: fraction b. 136-44° contains EtPh 43, m-xylene 29, p-xylene 22%, a little o-isomer and Me₂CH₂ isomers; fraction percentages are given in terms of aromatic content. The fraction b. 144-50° similarly carries in its aromatic components monoalkylbenzenes 22, o- and m-xylenes 67, and Me₂CH₂ 11%; fraction, b. 150-6° in its aromatic portion has EtPh and iso-EtPh 39, meta and para-disubstituted alkylbenzenes 45, and trialkylbenzenes 7%. The nonaromatic constituents: fraction, b. 136-44°: ethylcyclohexane 30, 1,3-dimethylcyclohexane 25, 1,2-dimethylcyclohexane 11, 1,4-dimethylcyclohexane 12, trimethylcyclohexanes 22%; fraction b. 144-50°: 10% propyl- and isopropylcyclohexanes, 1,2-methylethylcyclohexane 7, 1,3-isomer 20, para isomer 20, trimethylcyclohexanes 34%; fraction b. 150-6°: propyl and isopropylcyclohexanes 21, 1,2-methylethylcyclohexane 9, 1,3-isomer 16, 1,4-isomer 22, trimethylcyclohexanes 32%. G. M. Kozlovskii

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